

Atty Docket No.: JCLA7793-R

Serial No.: 10/047,681

REMARKS**Present Status of Patent Application**

Favorable reconsideration of this application, as presently amended, is respectfully requested. This application is a Continuation of patent application Serial No. 10/047,681, filed on January 14, 2002, now pending. Reconsideration is respectfully requested.

Favorable reconsideration of this application, as presently amended, is respectfully requested. Claims 1-17 remain pending of which claims 1, 4 and 9 have been amended, new claims 18 and 19 have been added, and claims 3, 7, 13 and 17 have been canceled, to more explicitly and more clearly describe the claimed invention. Further, the specification has been amended to further clarify the meaning of the term "flux layer" which are objected as being unclear in the first office action mailed dated May 6, 2003. More specifically, concerning amendments to specification, the "flux (layer)" is well known in the soldering art, wherein the "flux" are usually applied on the surfaces to remove any impurities such as greasy substances and the like from the surface before the solder is applied thereon. Further, to support that the "Flux" is well known in the art, Applicant respectfully submits IDS - US Patent Nos. 5,571,340 and 5,571,340, commonly owned by Fry's Metals Inc, as separate accompanying pages. It is believed that no new matter adds by way of these amendments made to the claims or specification, or otherwise to the application. For at least for the following reasons, Applicant respectfully submits that claims 1-2, 4-6, 8-12 and 14-19 are in proper condition for allowance. Reconsideration is respectfully requested.

In the previous outstanding official Office Action dated July 9, 2003, claims 1, 2, 4-6, 8-12 and 14-16 were rejected under 35 U.S.C. 102(b) as being anticipated by Hozumi et al. (JP-406275123A, hereinafter Hozumi); and claims 3, 7, 13 and 17 as being rejected under 35

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U.S.C. 103(a) as being unpatentable over Hozumi as applied to claim 1, 4 9 and 15, and further in combination with Kozuka et al. (US-20010046021, hereinafter Kozuka).

Applicant respectfully disagrees and traverses the above rejections as follows. Hozumi (FIG. 4, 6 and 8) substantially shows a structure of a conductive particle, in that the metal particle 8 is plated with a metal plating 10 such as Au or Ag, and the resulting structure is coated with a thermoset resin layer 11. Accordingly, Applicant respectfully submits that Hozumi substantially fails to teach, suggest or disclose a flux layer that forms as an outermost covering layer of the conductive bead as required by the amended Claim 1, instead Hozumi substantially discloses a thermoset resin layer 11 covering the metal particles 8. Accordingly, Applicant respectfully submits that Hozumi cannot possibly anticipate Claim 1 in this regard. The advantages of including the flux layer 206 as an outermost covering layer that contain halide free and water soluble activators is that impurities such as ions, grease and the like can be cleaned from the surface contacts of both the silicon chip 200 and the carrier 204 so that the electrical properties of the surface contacts can be substantially improved. Further, the flux layer 206 also contribute to the binding of the bonded anisotropic conductive film to contact point surface and forms common metallic bonds. In addition, the flux layer 216 being an insulator can also prevent short-circuiting of the contact points 202 and 206 with conductive particles 210 outside the bonding regions.

Further, Applicant respectfully submits that Hozumi also substantially fails to disclose the conductive particles are covered by a bonding layer comprised of lead-tin alloy material as

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required by the amended claims 4 and 9, instead Hozumi substantially discloses a metal plating 10 comprised of Au or Ag covering the metal particles 8. Accordingly, Applicant respectfully submits that Hozumi cannot possibly anticipate Claims 4 and 9 in this regard. The advantage of using a lead-tin alloy for covering the conductive bead is that when the conductive particle is compressed (between two electrodes), because the lead-tin alloy envelops the Au or Ag particle, the lead-tin alloy being soft squeezes out of the outermost insulation layer. Further, lead-tin alloy being soft but yet being strong enough, does not break and separate from the conductive bead. As a result, as the lead-tin alloy squeezes out of the outermost insulation layer, it spreads out to increase the contact surface area, and therefore the lead-tin alloy as a bonding layer not only provides adequate structural reliability but also promotes electrical contact providing a reliable electrical connectivity. Further, because the melting point temperature of the lead-tin alloy is low, therefore the elevated temperature during the subsequent process can cure the internal stress and thus prevent from breaking. Accordingly the reliability of the device can be substantially improved.

In other words, because Hozumi fails to disclose a flux layer as an outermost covering layer of the conductive particles as claimed in claim 1, and a bonding layer comprised of lead-tin alloy covering the conductive bead as claimed in claims 4 and 9, and therefore, Hozumi anticipate claims 1, 4 and 9 of the claimed invention.

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For at least the foregoing reason, Applicant respectfully submits claims 1, 2, 4-6, 8-12 and 14-16 patentably define over Hozumi. Reconsideration and withdrawal of these rejections is respectfully requested.

Applicant respectfully submit that the features recited in claims 7, 13 and 17 have been respectively incorporated into independent claims 4 and 9. Applicant respectfully disagrees with the Examiner's interpretation of Kozumi disclosure and would like to point out that Kozuka on page 7, paragraph [0125], discloses that the conductive layer 3 that is formed on the core particle 2 is formed of a conductive metal, such as Zn, Al, Sb, U, Cd, Ca, Au, Ag, Co, Sn, Se, Fe, Cu, Th, Pb, Ni, Pb, Be and Mg. Further, Kozuka teaches that the above metals can be used alone or more than two metals can be used. Furthermore, Kozuka on page 7, paragraph [0127], teaches that the conductive layer is comprised of a Ni layer (3a) and an Au layer (3b) formed on the Ni layer (3a). Accordingly, Applicant respectfully submits that Kozuka substantially fails to teach a lead-tin alloy layer for enveloping the core particle 2, instead teaches a multi-layer metal structure comprised of individual metal layers. Accordingly, Applicant respectfully submits that Kozuka cannot possibly suggest one skilled in the art to modify the bonding layer 10 of Huzumi in a manner suggested by the Office Action. Accordingly, Applicant respectfully submit that Kozuka still cannot cure the specific deficiencies of Hozumi in this regard. Therefore, no combination of Hozumi and Kozuka in a manner suggested by the Office Action could render the claimed invention obvious. For at least the foregoing reasons, Applicant respectfully submits that all claims patentably define over prior

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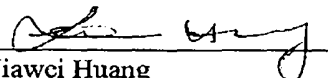
art of record and therefore should be allowed. Reconsideration and withdrawal of these rejections is respectfully requested.

For at least the foregoing reasons, it is believed that all pending claims 1-2, 4-6, 8-12 and 14-16 are in proper condition for allowance. If the Examiner believes that a conference would be of value in expediting the prosecution of this application, he is cordially invited to telephone the undersigned counsel to arrange for such a conference.

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